

## METHODS OF TAKING BIRDS OF PREY FOR BANDING

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DURING the winters of 1935-36 and 1936-37, 108 adult birds of prey of 13 species<sup>1</sup> were trapped, weighed, and banded near Stockton, Kansas, where the writer was employed as a science instructor in the high school. This work was made possible through the interest and coöperation of the high-school boys who looked after many of the sets.

Several types of traps were used, but the No. 1 double-jawed jump trap was found most effective. The jaws were first covered with friction tape, then wrapped with several layers of heavy Canton flannel or similar thick cloth, until the padding was about one-fourth inch thick, then this was covered with a double layer of tape. The cloth was cut in strips one inch wide before wrapping. The inner tape prevented the cloth from slipping on the jaws of the trap, and the outer layer held the cloth in place and helped to hold the bird. If the thickness of the wrapping is uniform, the end of the jaws will catch most of the impact and the jaws will stand apart slightly in the center when sprung, thus relieving the pressure on the bird's leg. The jump trap spring can be weakened by placing a block between the spring and the bottom of the trap and then forcing the free end of the spring downward by use of a vice or large pliers.

A full-grown hen was placed on the ground in a wire cage 14 by 16 inches, and four traps were set around the cage. Two traps were placed on posts close by. This method was used for one week each in two separate locations, and no catches were made with it. Sets in these same areas baited with dead rabbits were catching from one to three hawks a week and an occasional Great Horned Owl. One American Rough-legged Hawk was caught with a calf's head as bait. In the winter of 1936-37, while rabbit-baited sets were successful, trapping was carried on for two weeks around two dead sheep, but no hawks were caught, although several Magpies were taken at this set.

Although no catches were made at three winter sets baited with dead white-footed mice, I am certain that mice are an important food item of the hawks here, because when the weather turned warm in February, 1936, we were immediately unable to catch any more hawks at the sets baited with rabbits. This was attributed to the abundance of white-footed and harvest mice, which was evidenced

<sup>1</sup> American Rough-legged Hawk, 31; Marsh Hawk, 24; Great Horned Owl, 17; Swainson's Hawk, 9; Ferruginous Rough-leg, 7; Red-tailed Hawk, 6; Sparrow Hawk, 4; Burrowing Owl, 4; Turkey Vulture, 2; Harlan's Hawk, 1; Prairie Falcon, 1; Barn Owl, 1; and Screech Owl, 1.

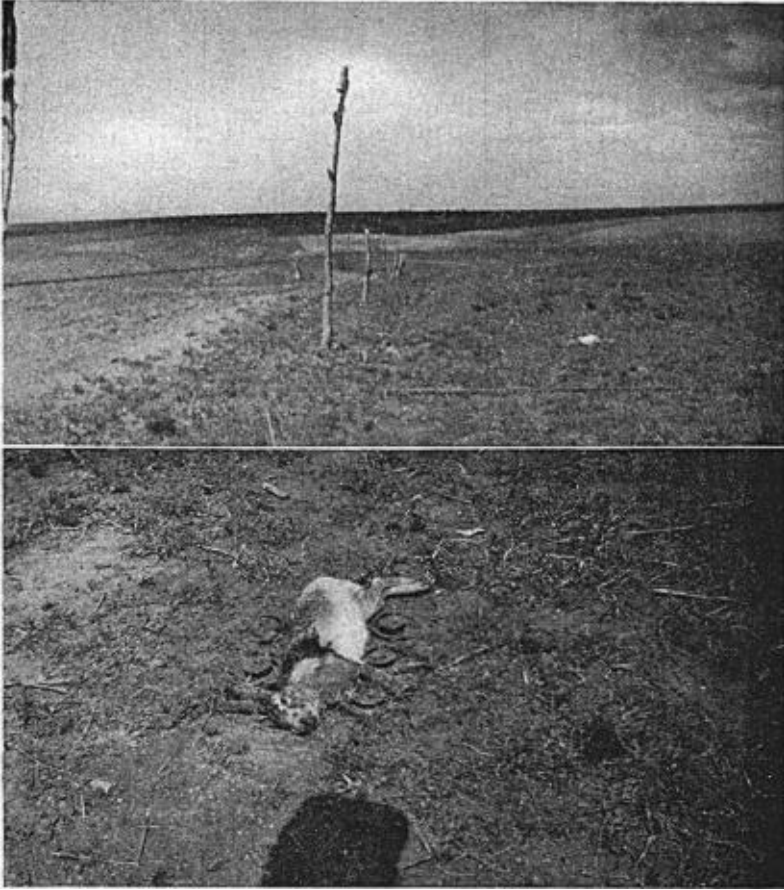


Figure 1 (upper). Picture of the pole upon which the trap is set, showing position of the rabbit bait on the ground to the right.

Figure 2 (lower). Rabbit as bait for hawks, with traps set around it as a means of taking birds of prey.

by the many specimens brought into the science room and observed in the field. This was the first time that mice had been common since the severe drouth of 1934. The *Microtus*, in particular, had been almost completely exterminated and is still rare.

The most successful set was prepared by selecting a fence on which hawks had been observed to be in the habit of perching, then placing a rabbit on the ground about ten feet from the fence and setting four traps closely around it, concealing them with dead grass or weeds. (Figs. 1 and 2.) Two hawks were caught around one rabbit at the same time by staking the chains of the traps on opposite sides of the bait so that one bird would not trip all the traps. Rabbits proved so attractive that they were the only bait used the second winter. In addition to the ground traps, two were set on nearby posts. The No. 1 jump trap will stay on a post without fastening if the post is flat-topped. Sometimes the posts were heightened by nailing together two two-by-fours of unequal length so that they were even at the upper end, the offset end was then fastened to the post by nailing through the longer piece. The trap chain was tied to the post above the level of the top fence-wire by a heavy cord just long enough to let the trap and captured bird touch the ground on either side of the fence. When this length of cord is used, it is impossible for the bird to move straight outward from the post and thus produce a solid jerk on the chain, because the trap must move through an arc. The bird is usually thrown off balance at each attempt to fly and it is seldom able to rise from the ground.

Such a set using two pole traps and four ground traps caught as many as five hawks in one week, and would no doubt have caught more if it could have been visited more often. Under our working conditions we were unable to look at the traps between eight o'clock in the morning and four o'clock in the afternoon except on Saturdays and Sundays, when they were visited about four times daily. Three hawks were caught in one set during one Saturday.

If an isolated pole is used, a wire can be run through the ring of the trap chain and one end stapled near the top of the post. The other end of the wire should be fastened as far above the ground as the length of the trap chain. When the bird is caught, the ring will slide down this wire and let the bird rest on the ground, but there will be no slack.

The most successful locations for sets were found to be on high ground with a good view of the immediate vicinity, but it was not necessary to have them far from the farm site. Some of the best locations were not more than 300 yards from farm buildings.

More birds were caught in the ground traps than in an equal number on posts. About one-fourth of the Buteos were taken on posts, but only one Marsh Hawk. Swainson's Hawks were usually

caught on the post sets, but the Rough-legged Hawks were almost invariably taken in the ground traps. Red-tailed Hawks were caught in both places in about equal numbers.

Of the 54 Buteos caught, only one, a Swainson's Hawk, sustained a broken leg, which we amputated. The bird ate well and was released after about a week. It flew well when released. About one-fourth of the large hawks caught would have the leg rubbed slightly, but very few had the skin broken. I believe the one Swainson's Hawk, was the only Buteo whose injuries would not heal quickly when released. Every large hawk, except two that got their wings muddy, was able to fly well when liberated. One American Rough-legged Hawk, caught November 16, 1936, had the leg skin broken and was bleeding; when recaptured seven days later, the old injury was scarcely visible. The injuries would be materially reduced if the traps could be more constantly attended.

Twenty-four Marsh Hawks were caught during the two years. Of this number there were five that had broken legs. Two more were twisted out of joint at the heel. Marsh Hawks are not as quiet in the traps as are the Buteos. It is my opinion that few were injured by the impact of the trap jaws, but that most of the birds broke their frail tarsi by their violent struggles after being caught. Two Marsh Hawks that were observed at the time of capture and immediately removed were not marked by the traps. A much lighter trap with about the same spread of jaws as the No. 1 is needed for this bird, but no trap of this sort is now available.

Four Sparrow Hawks were accidentally caught while we were trapping for the larger birds. Two had broken legs. The other two were not hurt.

Our experience has proved that Marsh Hawks cannot be successfully taken in padded steel traps unless they can be visited often, and even then the injuries might run too high to justify this method of capture. Sparrow Hawks certainly should not be taken in this way.

Some method of preventing Marsh Hawks and Sparrow Hawks from tripping traps set for the larger hawks is necessary. I believe this could be done by fastening a spring or a piece of sponge rubber under the pan to make it harder to trip. Some experimenting on this plan is much needed.

One Prairie Falcon was caught and its leg was skinned considerably. It was recaught in good condition on the same post the following winter. This bird struggled violently each time it was approached in the trap.

With the padded steel traps one catch was made out of every three or four times a trap was sprung. I believe the reason for the trap being sprung so many times without catching is that the bird's

foot covers both the jaw and the pan of the trap and when the trap snaps the foot is thrown clear of the jaws. About 60 per cent of the Buteos were caught by the toes, and no doubt some caught in this way were able to pull out of the padded traps; however, this would not make the padded traps less useful in catching the harmful species, because they are mostly too small to be caught by the toes.

Four pole traps and two ground traps that operated by means of a steel wire spring which threw a chain around the birds' foot were used for two months during the winter of 1936-37. These were not as successful as the padded steel traps in making catches and the two American Rough-legged Hawks which were caught in these traps had their legs skinned quite severely—more than is usual in the padded steel trap. These foothold traps are relatively new and are now being extensively tested to find ways of improving them.

A recently patented jump trap that has the jaws covered with corrugated rubber was used late the second winter for a short time. An American Rough-legged Hawk and a Marsh Hawk were the only catches made in this trap, and both were in perfect condition. If some additional wrapping of the jaws is found necessary for the smaller hawks, it would be much easier than wrapping an ordinary steel trap. With the help of Richard H. Pough, a number of these traps were obtained through the National Association of Audubon Societies, and plans were made to give them a complete testing but snowstorms prevented their use before the writer was forced to give up the banding work in this area. It is believed that this trap will prove better than the padded steel trap, although it could be improved for bird use by using a thicker and softer rubber pad and by making the trap out of lighter material.

The methods described in this paper are far from perfect, but it is hoped that the information may be of help in working out better methods which will give fewer injuries. The writer will do no further trapping unless the traps can be more constantly attended or less harmful methods developed.

#### SUMMARY

1. Live, caged chickens were not successful bait for trapping birds of prey in this area.
2. Dead jack rabbits were the most successful bait. In regions where the cottontail is more abundant it could be substituted for the jack rabbit.
3. Well-padded steel traps proved very effective in taking birds of prey and, judging from the limited number of catches in this experiment, were not seriously harmful to the larger birds.
4. Trapping birds of prey was most successful in midwinter, when food was scarce.

5. Marsh Hawks showed too high a percentage of serious injuries to warrant taking them in padded steel traps. Most of the damage was believed to be due to the struggles of the bird against the heavy trap and not to the impact of the trap when sprung. For this reason the injuries may be greatly alleviated where it is possible to attend the traps closely. I feel certain that many of the injuries could be eliminated if a much lighter trap could be made without reducing the spread of the jaws. Such a trap would offer less resistance to the movements of the bird and decreases the harm done by its floundering after it is caught. Some method of keeping the smaller birds out of traps set for large hawks is necessary. This might be done by the use of springs or sponge-rubber pads under the trap pans. Some trap companies are working now to develop a steel trap for birds that will be both selective and harmless. The chain foothold trap is being extensively tested to find means of improving it. This work may soon produce the bird trap that we have been looking for—one that is effective as well as humane, and one that is ready to use when purchased.

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## NOTES ON HIPPOBOSCID FLIES<sup>1</sup>

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WHILE making a survey of the relative prevalence of blood parasites in our native birds at the Austin Ornithological Research Station on Cape Cod (Herman, 1938), numerous hippoboscid flies were observed. Certain of the larger species of these bird flies have been shown to transmit *Hæmoproteus*—a common malaria parasite of avian red blood cells. None of the smaller flies nor the infections of birds other than domestic pigeons, doves, and quail have been extensively studied. An effort has, therefore, been made to collect a number of the flies and to determine whether any relationship exists between the occurrence of these ectoparasites and the endoparasites of the blood. The present paper is mainly a list of the hosts which have been found infested with these flies at the Austin Station, with a few added remarks on their relative abundance on different species of birds and the rôle they may play in the spread of parasites among the avifauna. The author is indebted to Dr. J. Bequaert of the Department of Tropical Medicine, Harvard University Medical School, for suggestions and encouragement and for verifying the identification of a number of the flies.

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<sup>1</sup> Contribution No. 28, Austin Ornithological Research Station, Cape Cod, Massachusetts.